

RDT/SAC

## PATENT COOPERATION TREATY

PCT/US2005/006448

From the INTERNATIONAL BUREAU

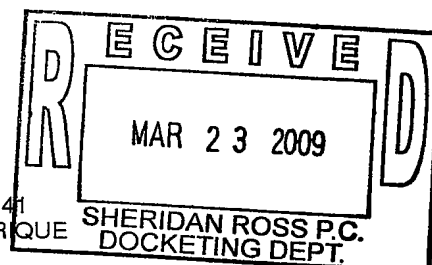
~~COPY GIVEN TO IDS DEPT.~~

Date: 4/7/09 (YDC) PCT

NOTIFICATION CONCERNING  
TRANSMITTAL OF COPY OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY  
(CHAPTER I OF THE PATENT COOPERATION  
TREATY)

(PCT Rule 44bis.1(c))

To:

TRAYER, Robert, D.  
Sheridan Ross P.C.  
1560 Broadway  
Suite 1200  
Denver, CO 80202-5141  
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year)

12 March 2009 (12.03.2009)

Applicant's or agent's file reference

5161-2-PCT

## IMPORTANT NOTICE

International application No.

PCT/US2005/006448

International filing date (day/month/year)

28 February 2005 (28.02.2005)

Priority date (day/month/year)

27 February 2004 (27.02.2004)

Applicant

UNIVERSITY OF DENVER et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer

Athina Nickitas-Etienne

e-mail: pt04.pct@wipo.int

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 5161-2-PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/US2005/006448	International filing date ( <i>day/month/year</i> ) 28 February 2005 (28.02.2005)	Priority date ( <i>day/month/year</i> ) 27 February 2004 (27.02.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant UNIVERSITY OF DENVER		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 5 sheets, including this cover sheet.																								
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																									
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																							
<input type="checkbox"/>	Box No. II	Priority																							
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																							
<input type="checkbox"/>	Box No. IV	Lack of unity of invention																							
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																							
<input type="checkbox"/>	Box No. VI	Certain documents cited																							
<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Date of issuance of this report 03 March 2009 (03.03.2009)</td> </tr> <tr> <td style="padding: 5px;">           Authorized officer   <div style="text-align: center; font-weight: bold;">Athina Nickitas-Etienne</div>           e-mail: pt04.pct@wipo.int         </td> </tr> </table>	Date of issuance of this report 03 March 2009 (03.03.2009)	Authorized officer  <div style="text-align: center; font-weight: bold;">Athina Nickitas-Etienne</div> e-mail: pt04.pct@wipo.int
Date of issuance of this report 03 March 2009 (03.03.2009)			
Authorized officer  <div style="text-align: center; font-weight: bold;">Athina Nickitas-Etienne</div> e-mail: pt04.pct@wipo.int			

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
ROBERT D. TRAVER  
SHERIDAN ROSS P.C.  
1560 BROADWAY, SUITE 1200  
DENVER, CO 80202-5141

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference <b>5161-2-PCT</b>		Date of mailing (day/month/year) <b>15 JUL 2008</b>
<b>FOR FURTHER ACTION</b> See paragraph 2 below		
International application No. <b>PCT/US05/06448</b>	International filing date (day/month/year) <b>01 March 2005 (01.03.2005)</b>	Priority date (day/month/year)
International Patent Classification (IPC) or both national classification and IPC IPC: <b>C12Q 1/68 AND C07H 21/02</b> USPC: <b>435/6 AND 536/23.1</b>		
Applicant <b>UNIVERSITY OF DENVER</b>		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I      Basis of the opinion
- ☐ Box No. II      Priority
- ☐ Box No. III      Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV      Lack of unity of invention
- ☒ Box No. V      Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI      Certain documents cited
- ☐ Box No. VII      Certain defects in the international application
- ☒ Box No. VIII      Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion <b>20 June 2008 (20.06.2008)</b>	Authorized officer  Frank Lu Telephone No. 703-308-0196
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------	------------------------------------------------------------------

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US05/06448

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of:

a. type of material

- ☒ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☒ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☒ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US05/06448

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>3 and 5-26</u>	YES
	Claims <u>1, 2, and 4</u>	NO
Inventive step (IS)	Claims <u>3 and 5-26</u>	YES
	Claims <u>1, 2, and 4</u>	NO
Industrial applicability (IA)	Claims <u>1-26</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

1. Claims 1 and 2 lack novelty under PCT Article 33(2) as being anticipated by US Patent No. 6,670,124 B1. Regarding claims 1 and 2, US Patent No. 6,670,124 B1 teaches a method of isolating a high complexity nucleic acid molecule, comprising: a) hybridizing high complexity nucleic acid fragments (ie., target nucleic acids) to a functionalized nucleic acid probe (ie., biotin-labeled primer) having a sequence complimentary to at least a portion of a high complexity nucleic acid molecule to form hybridized nucleic acid fragments; b) complexing the functionalized nucleic acid probe with a capture agent (ie., magnetic beads coated with avidin); c) immobilizing the capture agent (ie., on a well); and, d) eluting the high complexity nucleic acid molecules from the functionalized nucleic acid probe as recited in claim 1 wherein the functionalized nucleic acid probe is a biotinylated nucleic acid probe as recited in claim 2 (see abstract and columns 19 and 20).

Therefore, US Patent No. 6,670,124 B1 teaches all limitations recited in claims 1 and 2.

2. Claim 4 lacks an inventive step under PCT Article 33(3) as being obvious over US Patent No. 6,670,124 B1 in view of US Patent No. 5,512,439 A.

The teachings of US Patent No. 6,670,124 B1 have been summarized previously, *supra*.

US Patent No. 6,670,124 B1 does not disclose that the capture agent comprises streptavidin-coated magnetic beads as recited in claim 4.

US Patent No. 5,512,439 A teaches that streptavidin/avidin coated magnetic beads (see Example 7 in column 19).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have performed the method recited in claim 4 wherein the capture agent comprises streptavidin-coated magnetic beads in view of the prior art of US Patent No. 6,670,124 B1 and US Patent No. 5,512,439 A. One having ordinary skill in the art would have been motivated to do so because the simple substitution of one kind of capture agent (ie., avidin-coated magnetic beads taught by US Patent No. 6,670,124 B1) from another kind of capture agent (ie., streptavidin-coated magnetic beads taught by US Patent No. 5,512,439 A) during the process of performing the method recited in claim 4, in the absence of convincing evidence to the contrary, would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made since avidin-coated magnetic beads taught by US Patent No. 6,670,124 B1 and streptavidin-coated magnetic beads taught by US Patent No. 5,512,439 A are used for the same purpose (ie., used as capture agent).

Furthermore, the motivation to make the substitution cited above arises from the expectation that the prior art elements will perform their expected functions to achieve their expected results when combined for their common known purpose.

Also note that there is no invention involved in combining old elements in such a manner that these elements perform in combination the same function as set forth in the prior art without giving unobvious or unexpected results.

3. Claims 3 and 5-26 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest all limitations recited in claims 3 and 5-26.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US05/06448

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claims 6 and 12 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims 6 and 12 are indefinite for the following reason(s):

Claim 6 is indefinite. Since claim 1 does not contain digested high complexity nucleic acid fragments, it is unclear why at least one DNA linker can be ligated to the ends of digested high complexity nucleic acid fragments to form ligated nucleic acid fragments prior to the hybridizing step. Please clarify.

Claim 12 is indefinite. Since claims 1 and 11 do not contain digested high complexity nucleic acid fragments, it is unclear why at least one DNA linker can be ligated to the ends of digested high complexity nucleic acid fragments to form ligated nucleic acid fragments prior to the hybridizing step. Please clarify.